ORDER NO. SD7909-1618

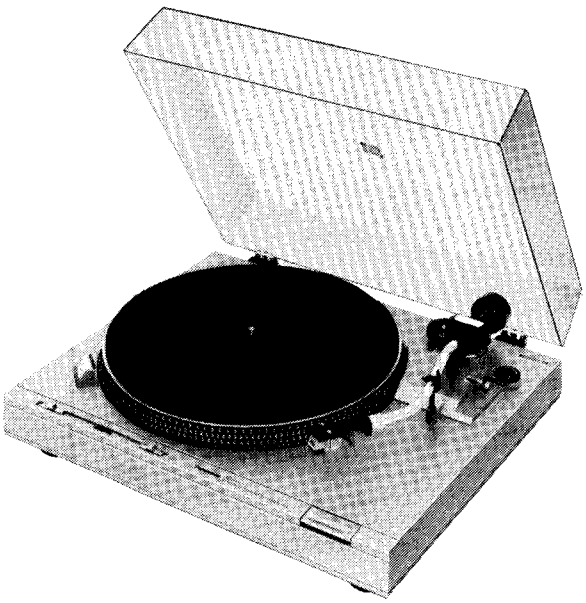
Service Manual

SL-H401

Turntable System

SL-H401

(XA),(XG),(XGB)



* The model SL-H401(XA) is available in Asia, Latine America, Middle East and Africa only.
* The model SL-H401(XG) is available in European only.
* The model SL-H401(XGB) is available in Belgium only.

SPECIFICATIONS

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.

General

Power supply:	~110-120/220-240V, 50 or 60Hz
Power consumption:	4W
Dimensions: (W x H x D)	43.0 x 13.0 x 36.9 cm (16-59/64" x 5-7/64" x 14-17/32")
Weight:	5.7 kg (12.54 lb.)

Turntable section

Type:	Automatic turntable Auto start Auto return Auto stop
Drive method:	Direct drive
Motor:	Brushless DC motor
Drive control method:	B·FG servo control
Turntable platter:	Aluminum die-cast, Diameter 31 cm (12-1/8")
Turntable speeds:	33-1/3 rpm and 45 rpm
Pitch control:	10% adjustment range
Wow and flutter:	0.03% WRMS (JIS C5521) ±0.042% peak (IEC 98A Weighted)
Rumble:	−53dB (IEC 98A Unweighted) −75dB (IEC 98A Weighted)

Tonearm section

Type:	Universal tonearm
Effective length:	230 mm (9-1/16")
Overhang	15 mm (19/32")
Friction:	Less than 7 mg (lateral, vertical)
Effective mass:	12 g (without cartridge)
Tracking error angle:	Within 2°32' at the outer groove of 30 cm (12") record Within 0°32' at the inner groove of 30 cm (12") record
Offset angle:	22°
Stylus pressure adjustment range:	0 ~ 2.5 g
Applicable cartridge weight range:	5.5 ~ 9 g 14 ~ 17.5 g (including headshell)
Headshell weight:	8.5 g

Cartridge section

Model No.	EPC-270C
Type:	Moving magnet
Frequency response:	20 Hz to 25 kHz 20 Hz to 15 kHz ±2 dB
Output voltage:	3.2 mV at 1 kHz 5 cm/s. zero to peak lateral velocity
Output voltage:	[9 mV at 1 kHz 10 cm/s. zero to peak 45° velocity (DIN 45 500)]
Channel separation:	25 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Compliance (dynamic):	10 x 10^{-6} cm/dyne at 100 Hz
Stylus pressure:	1.75 ± 0.25 g (17.5 ± 2.5mN)
Load impedance:	47 kΩ to 100 kΩ
Weight:	6.0 g (cartridge only)
Replacement stylus:	EPS-270SD

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SL-H401

TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungefähre Werte.

Allgemeine Daten

Stromversorgung:	~110-120/220-240 V, 50/60 Hz Wechselstrom
Leistungsaufnahme:	4W
Abmessungen (B x H x T):	43,0 x 13,0 x 36,9 cm
Gewicht:	5,7 kg

Plattenspieler

Typ:	Automatischer Plattenspieler Startautomatik Rückführautomatik Stopautomatik
Antrieb:	Direktantrieb
Motor:	Kollektorloser Gleichstrommotor
Antriebsregel-Methode:	Gegen-EMK-FG-Servo-Steuerung
Plattenteller:	Aluminum-Spritzguß, 31 cmϕ
Plattenteller-Drehzahlen:	33-1/3 und 45 U/min
Drehzahl-Feinregulierung:	10% Einstellbereich
Gleichlaufschwankungen:	0,03% WRMS (JIS C5521) ±0,042% Spitze (IEC 98A bewertet)
Rumpel-Geräuschspannungsabstand:	–53 dB (IEC 98A unbewertet)
Rumpel-Fremdspannungsabstand:	–75 dB (IEC 98A bewertet)

Tonarm

Typ:	Universal-Tonarm
Effektive Länge:	230 mm
Überhang:	15 mm
Lagerreibung:	Weniger als 7 mg (horizontal, vertikal)
Effektive Masse:	12 g (ohne Tonabnehmer)
Spurfehlwinkel:	2°32′ bei der Einlaufrille einer 30 cm-Platte 0°32′ bei der Auslaufrille einer 30 cm-Platte
Kröpfungswinkel:	22°
Auflagekraft-Einstellbereich:	0 ~ 2,5 g
Zulässiger Tonabnehmer-Gewichtbereich:	5,5 ~ 9 g 14 ~ 17,5 g (einschließlich Tonarmkopf)
Tonarmkopf-Gewicht:	8,5 g

Tonabnehmer

Modell-Nummer:	EPC-270C
Typ:	Magnetischer Tonabnehmer
Frequenzgang:	20 Hz bis 25 kHz 20 Hz bis 15 kHz ±2 dB
Ausgangsspannung:	3,2 mV bei 1 kHz 5 cm/s. Null-zu-Spitze, lateral [9 mV bei 1 kHz 10 cm/s. Null-zu-Spitze, 45° (DIN 45 500)]
Kanaltrennung:	25 dB bei 1 kHz
Kanalabweichung:	Innerhalb 2 dB bei 1 kHz
Nachgiebigkeit (dynamisch):	10 x 10^{-6} cm/dyn bei 100 Hz
Auflagekraft:	1,75 ±0,25 g (17,5 ± 2,5 mN)
Impedanz:	47 kΩ bis 100 kΩ
Gewicht:	6,0 g (ohne Tonarmkopf)
Ersatznadel:	EPS-270SD

SPÉCIFICATIONS

Les spécifications sont susceptibles d'être modifiées sans préavis.
Les poids et les dimensions donnés sont approximatifs.

Généralités

Alimentation:	Alternatif 110-120/220-240 V, 50 ou 60 Hz
Consommation:	4 W
Dimensions: (L x H x P):	43,0 x 13,0 x 36,9 cm
Poids:	5,7 kg

Platine de lecture

Type:	Platine automatique Démarrage automatique Retour automatique Arrêt automatique
Système d'entrainement:	Entraînement direct
Moteur:	Moteur C.C. sans balai
Groupe de réglage:	Servocommande du génerateur de fréquence de force contre-électromotrice
Plateau de lecture:	Aluminium moulé sous pression, 31 cm
Vitesses de rotation:	33-1/3 et 45 t/p.m
Réglage d'écart:	Plage de réglage de 10%
Pleurage et scintillement:	0,03% de valeur efficace (JIS C5521) ±0,042% de crête (IEC 98A Pondéré)
Ronflement:	–53 dB (IEC 98A Non pondéré) –75 dB (IEC 98A Pondéré)

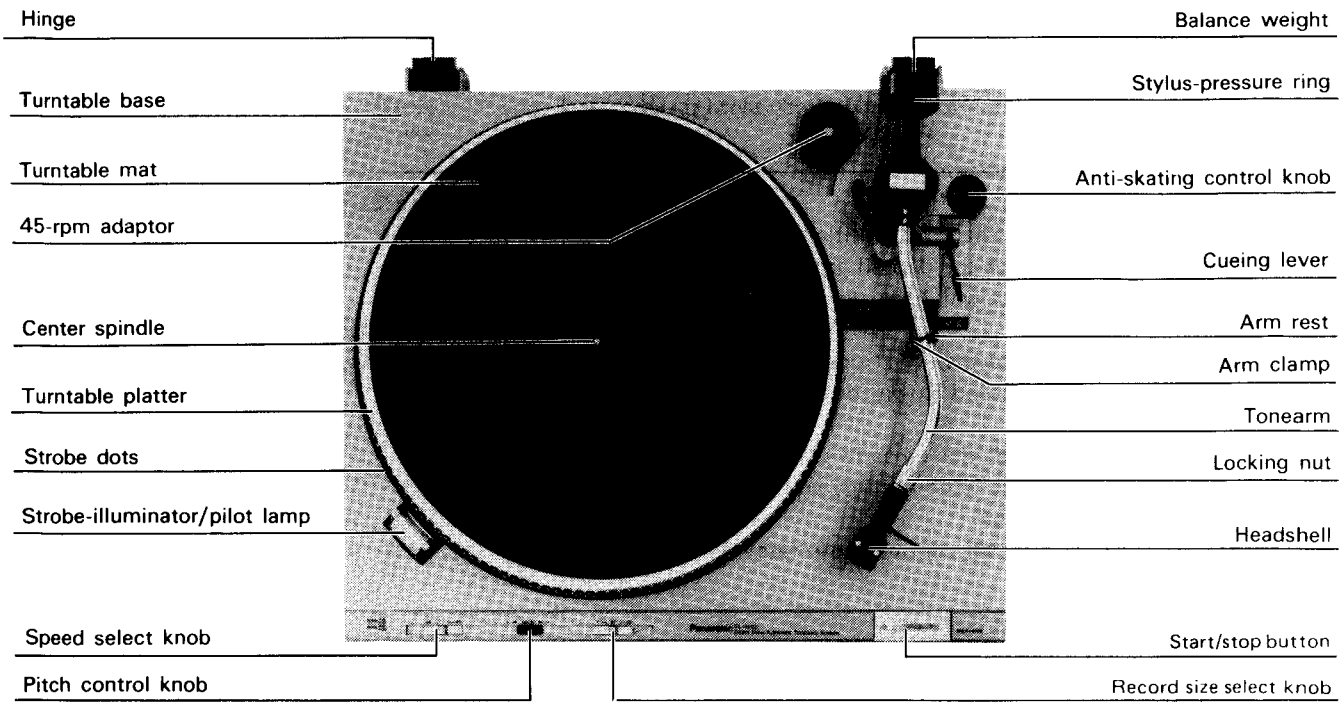
Bras de lecture

Type:	Bras de lecture universal
Longueur effective:	230 mm
Porte-à-faux:	15 mm
Frottement:	Moins de 7 mg (latéral et vertical)
Masser réelle:	12 g (sans la cellule pick-up)
Angle d'erreur de piste:	En deçà de 2°32′ au sillon extérieur d'un disque de 30 cm En deçà de 0°32′ au sillon intérieur d'un disque de 30 cm
Angle de décalage:	22°
Plage de réglage de la pression d'appui:	0 ~ 2,5 g
Gamme du poids de la cellule pick-up utilisable:	5,5 ~ 9 g 14 ~ 17,5 g (y compris la coque porte-cellule)
Poids de la cellule:	8,5 g

Cellule pick-up

No. du modèle:	EPC-270C
Type:	Aimant mobile
Réponse en fréquence:	20 Hz à 25 kHz 20 Hz à 15 kHz ±2 dB
Tension de sortie:	3,2 mV à 1 kHz; 5 cm/s., zéro à vitesse latérale de crête (9 mV à 1 kHz 10 cm/s., zéro à vitesse 45° de crête [DIN 45 500])
Séparation de canal:	25 dB à 1 kHz
Equilibrage des canaux:	En deçà de 2 dB à 1 kHz
Elasticité (dynamique):	10 x 10^{-6} cm/dyne à 100 Hz
Pression de la pointe de lecture:	1,75 ±0,25 gramme (17,5 ± 2,5 mN)
Impédance de charge:	47 kΩ to 100 kΩ
Poids:	6,0 grammes (cellule seule)
Pointe de lecture de remplacement:	EPS-270SD

■ PARTS IDENTIFICATION



■ DISASSEMBLY PROCEDURE

How to remove the bottom board (See Fig. 1)

1. Remove headshell and turntable.
2. Secure arm with arm clamp.
3. Turn the set upside-down taking care not to damage dust cover.
4. Remove the bottom board setscrews Ⓐ (7 pcs.)

How to remove drive P.C.B. and automatic mechanism ass'y (See Fig. 2)

1. Remove the bottom board.
2. Remove the 3 set screws Ⓑ of the drive P.C.B.
3. Remove the 4 setscrews Ⓒ of the automatic mechanism ass'y.

Removal of stater frame ass'y (See Fig. 3)

1. Remove the bottom board.
2. Remove the drive P.C.B. and automatic mechanism ass'y.
3. Remove 3 setscrews Ⓓ of the stater frame cover.

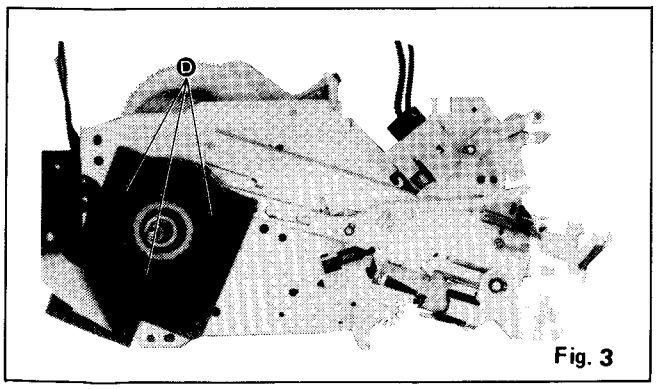


Fig. 3

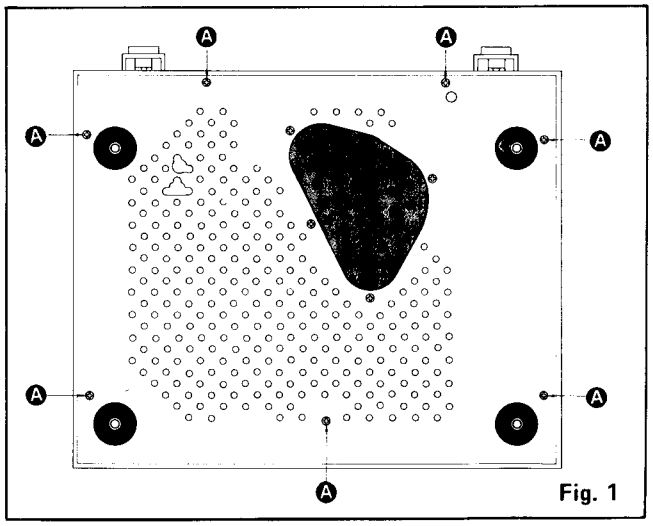


Fig. 1

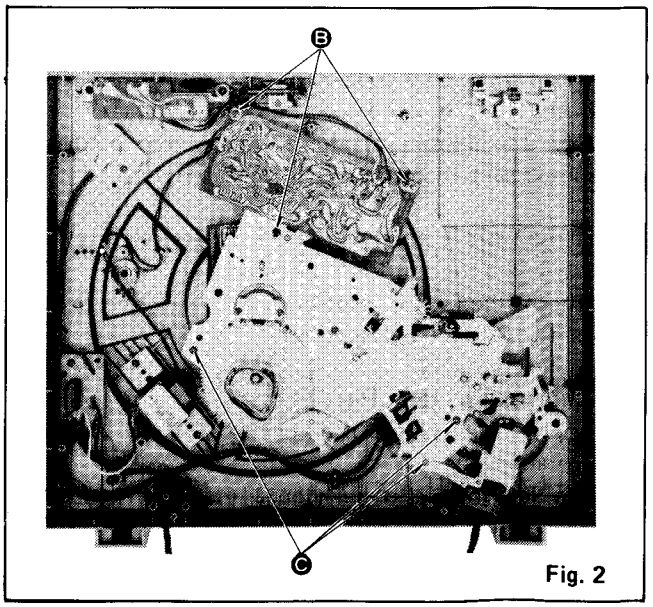


Fig. 2

■ HOW TO OPERATE

Manual play

1. Place a record on the turntable mat.
2. Set the speed select knob to the he desired record speed. **(See Fig. 4)**
3. Remove the stylus protector.
4. Release the arm clamp.
5. Set the cueing lever to the " ▼ " position.
6. Move the tonearm over the desired groove. **(See Fig. 5)**
   The strobe-illuminator will light up and the turntable platter will rotate.
7. Set the cueing lever to the " ▼ " position. **(See Fig. 6)**
   The tonearm will descend slowly onto the record and play will begin.
8. When play is finished, the tonearm will automatically return to the arm rest (auto-return), and the turntable platter will stop rotation.
   The turntable platter will continue to rotate briefly due to its own inertia.

Automatic play

1. Set the speed select knob in the same manner as in manual play and release the arm clamp.
2. Set the record size select knob to the diameter of the record [7" (17cm), 10" (25cm), or 12" (30cm)] you wish to play. **(See Fig. 7)**
3. Push the start/stop button. **(See Fig. 8)**
   The tonearm will move automatically over the lead-in groove and descend slowly onto the record (auto-start). Play will begin.
4. When play has finished, the tonearm will automatically return to the arm rest (auto-return).

How to stop play

Push the start/stop button.
The tonearm automatically returns to the arm rest, and the turntable stops rotating.

How to suspend play

Set the cueing lever to the " ▼ " position.
The stylus tip of the cartridge will be lifted from the record.

When you play a 45-rpm record with a large center hole

Place the 45-rpm adaptor on the center spindle. Set the speed select knob to the "45" position.

If the unit is not to be used for some time

Secure the tonearm with the arm clamp.
Attach the stylus protector to guard the stylus from damage. Close the dust cover.

Lubrication (See Fig. 9)

Apply 2 or 3 drops of oil once after every 2000 hours of operation.
The time interval is much longer than that for conventional type motors (200–500 hours).
Please purchase original oil. **(Part number is SFWO 010.)**

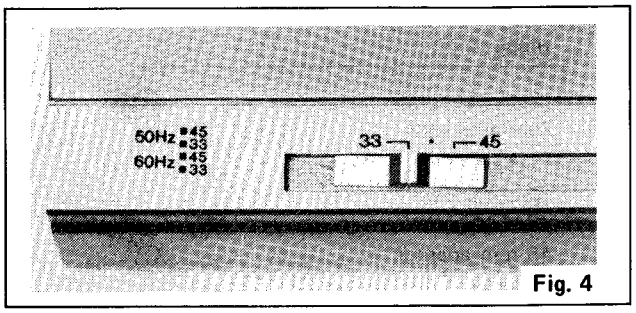


Fig. 4

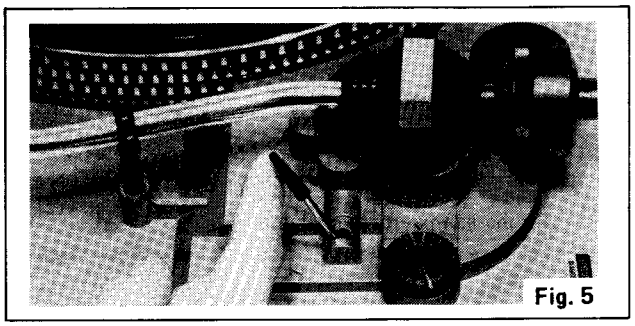


Fig. 5

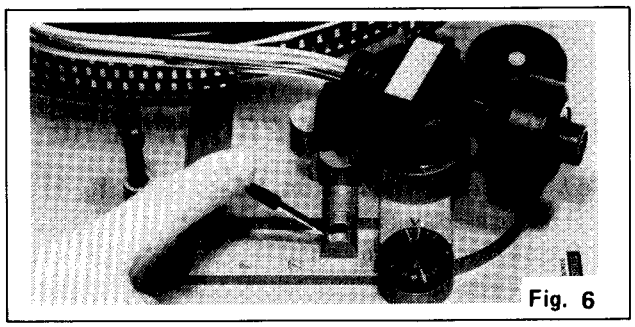


Fig. 6

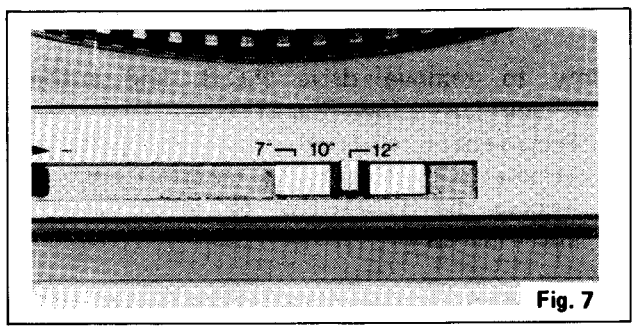


Fig. 7

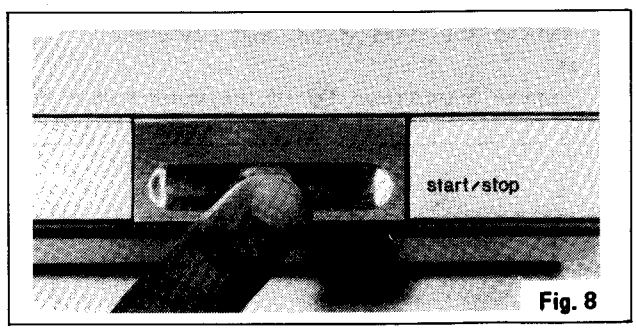


Fig. 8

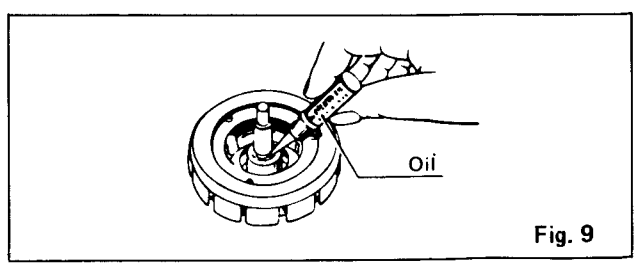


Fig. 9

■ ADJUSTMENTS

Adjustment of arm-lift height (See Figs. 10 and 11)

The arm-lift height (distance between the stylus tip and record surface when cueing lever is raised) has been adjusted at the factory before shipping to approximately 5 to 10mm.

If the clearance becomes too narrow or too wide, turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

Clockwise rotation

– distance between the record and stylus tip is decreased.

Counterclockwise rotation

– distance between the record and stylus tip is increased.

Note:

As the adjusting screw has a hexagonal head, be sure to make the adjustment while depressing the arm lift, or the screw will not move freely.

Also be sure that the hexagonal head retracts correctly into the arm lift when the latter is released.

Adjustment for automatic start position (See Fig. 12)

(Remove the rubber cap.)

In cases where the stylus tip sets down outside of the record.

– **rotate clockwise.**

In cases where the stylus tip sets down too far in the recorded groove.

– **rotate counterclockwise.**

Adjustment for automatic return position (See Fig. 12)

(Remove the turntable mat.)

In cases where the tonearm tends to return before the playing has finished.

– **rotate clockwise.**

In cases where the tonearm fails to return after the last groove of the record has been played.

– **rotate counterclockwise.**

Speed adjustment (with pitch-control knob) (See Fig. 13)

Strobe dots are set on the rim of the turntable platter according to the power-line frequency and the speed of the records.

Make adjustment, referring to the strobe-dot indication.

1. Set the speed select knob to the speed to be adjusted.
2. Release the arm clamp and move the tonearm toward the record.
   The strobe-illuminator/pilot lamp will light up and the turntable platter will rotate.
3. While turning the pitch-control knob either to the "+" side or "–" side, adjust so that the strobe dots of the turntable platter look as if they were stationary. This represents the correct speed.
   "+" direction
   The speed of the turntable platter will increase. Turn the knob in this direction if the strobe dots seem to be **"falling back"**, i.e. seem to be moving counterclockwise.

When the dots appear to be stationary, turntable speed is accurate.

"–" direction

The speed of the turntable platter will decrease. Turn the knob in this direction if the dots seem to be **"running ahead"**, i.e. seem to be moving clockwise, until they appear stationary.

Moreover, the pitch control knob can be used for both 33-1/3 rpm and 45 rpm. Adjustment is to be made according to selected speed (33-1/3 or 45 rpm).

Note:

Strobe dot pattern

The strobe-illuminator/pilot lamp of this unit employs the standard commercial power source. The frequency of such power source, when actually measured, has a fluctuation of about 0.2%.

As such a fluctuation of the power source affects the strobe illuminator, the strobe dot pattern also seems to fluctuate to a certain extent. But the unit is not affected by these fluctuations of the power source, since a DC motor is employed.

In other words, rotation of the platter will be constant, and slight shifts in the movement of the dots simply reflect normal drift in the power-source frequency.

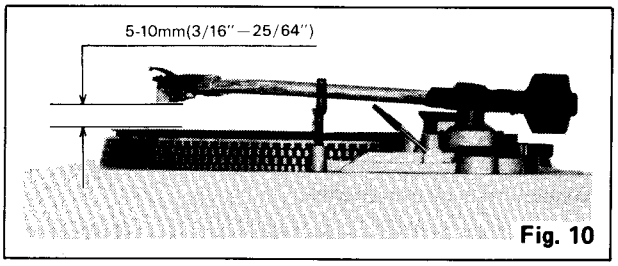


Fig. 10

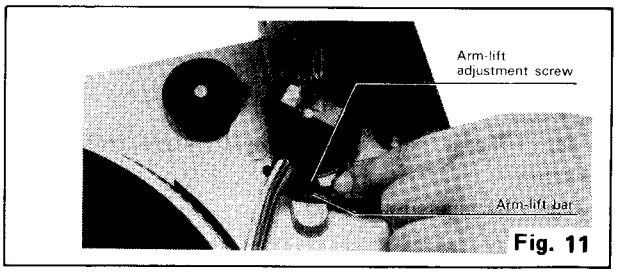


Fig. 11

Fig. 12

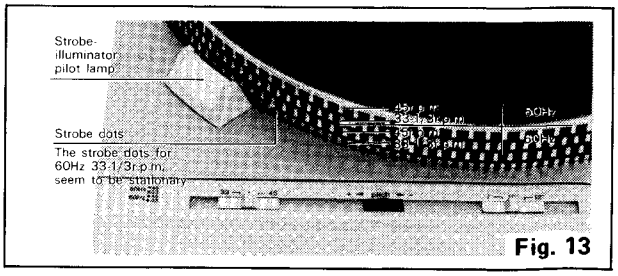


Fig. 13

■ JUSTIERUNGEN

Justierung der Tonarmlifthöhe (Vgl. Abb. 10 und 11.)

Die Tonarmlifthöhe, d.h. der Abstand zwischen Nadelspitze und Schallplattenoberfläche, wenn der Lift-Hebel angehoben ist, ist werkseitig auf ungefähr 5—10mm eingestellt worden. Falls der Abstand zu groß oder zu klein wird, drehen Sie die Justierschraube im Uhrzeigersinn oder Gegenuhrzeigersinn während Sie die Tonarmliftführung nach unten drücken.

Drehung im Uhrzeigersinn

—Der Abstand wird kleiner.

Drehung im Gegenuhrzeigersinn

—Der Abstand wird größer.

Anmerkung:

Da die Justierschraube einen Sechskantkopf hat, muß die Tonarmliftführung während des Justierens unbedingt gedrückt gehalten werden, damit sich die Schraube leicht drehen läßt.

Vergewissern Sie sich, daß der Sechskantkopf in die Tonarmliftführung zurückkehrt, wenn diese losgelassen wird.

Justierung des Tonarmaufsetzpunktes der Automatik (Vgl. Abb. 12.)

(Die Gummikappe abnehmen)

Falls der Aufsetzpunkt außerhalb der Platte liegt.

—Im Uhrzeigersinn drehen.

Falls der Aufsetzpunkt im Wiedergabeteil der Schallplatte liegt.

—Im Gegenuhrzeigersinn drehen.

Justierung des Abschaltpunktes der Automatik (Vgl. Abb. 12.)

(Die Plattentellerauflage abnehmen.)

Falls der Tonarm zu früh zurückkehrt.

—Im Uhrzeigersinn drehen.

Falls der Tonarm nach Erreichen der Auslaufrille nicht zurückkehrt.

—Im Gegenuhrzeigersinn drehen.

Drehzahl-Feineinstellung (mit dem Drehzahl-Feineinsteller) (Vgl. Abb. 13.)

Die Stroboskoppunkte sind auf dem Plattentellerrand entsprechend der Stromfrequenz und der Drehzahl der Schallplatten angebracht.

Richten Sie sich bei der Drehzahl-Feineinstellung nach dem Stroboskopbile.

1. Stellen Sie den Drehzahl-Wahlschieber auf die zu regulierende Drehzahl ein.
2. Lösen Sie die Tonarm-Arretierklammer, und schwenken Sie den Tonarm zur Schallplatte.
   Die Stroboskoplampe/Einschaltkontrolle leuchtet auf, und der Plattenteller dreht sich.
3. Regulieren Sie durch Drehen des Einstellknopfes in "+" oder "—" Richung solange, bis die Stroboskoppunkte den Anschein vermitteln, daß sie stillstehen. Dieser Zustand stellt die korrekte Drehzahl dar.

   "+" **Richtung**

   Die Drehzahl des Plattentellers erhöht sich. Drehen Sie den Knopf in diese Richtung, wenn die Stroboskoppunkte "zurückzufallen", d.h. im Gegenuhrzeigersinn zu fließen scheinen. Wenn die Punkte stillzustehen scheinen, ist die Geschwindigkeit korrekt.

   "—" **Richtung**

   Die Drehzahl des Plattentellers verringert sich. Drehen Sie den Knopf in diese Richtung, wenn die Stroboskoppunkte "vorauszueilen", d.h. im Uhrzeigersinn zu fließen scheinen. Regulieren Sie, bis sie stillzustehen scheinen.

   Der Drehzahl-Feineinsteller kann zudem für beide Drehzahlen, 33-3/1 und 45 U/min, benutzt werden.

   Die Feineinstellung wird entsprechend der gewählten Drehzahl (33-1/3 oder 45 U/min) vorgenommen.

Anmerkung:

Stroboskoppunktemuster

Die Stroboskoplampe/Kontrollampe dieses Gerätes arbeitet mit normalem Netzstrom. Die Netzfrequenzschwankungen liegen in einem Bereich von ungefähr ±0,2%.

Da eine solche Netzschwankung die Stroboskoplampe beeinflußt, scheint das Punktemuster auch zu einem gewissen Grad zu fließen. Die Drehzahl des Plattentellers wird jedoch durch diese Schwankung nicht beeinflußt, da ein Gleichstrommotor den Plattenteller antreibt. Anders ausgedrückt, die Umdrehungsgeschwindigkeit des Plattentellers bleibt konstant, und die geringfügige Bewegung der Stroboskoppunkte entspricht lediglich der normalen Schwankung der Netzfrequenz.

■ REGLAGES

Mise au point de la hauteur de l'élévateur du bras (Voir Figs. 10 et 11.)

La hauteur de l'élévateur du bras (distance entre l'extémité de la pointe de lecture et la surface du disque lorsque le levier de relevage du bras est soulevé) a été réglée en usine avant son départ sur une valeur approximativement 5 à 10 mm. Si l'écartement devient trop étroit ou trop large, tourner la vis de réglage dans le sens des aiguilles d'une montre ou en sens inverse, tout en abaissant l'élévateur du bras.

Rotation dans le sens des aiguilles d'une montre.

—La distance entre la surface du disque et l'extrémité de la pointe de lecture diminue.

Rotation das le sens contraire des aiguilles d'une montre.

—La distance entre la surface du disque et l'extrémité de la pointe de lecture augmente.

Nota:

Comme la vis de réglage possède une tête hexagonale, s'assurer d'effectuer la mise au point tout en abaissant l'élévateur du bras, sinon la vis ne bougera pas librement. Vérifier aussi que la tête hexagonale se retire correctement dans l'élévateur du bras quand ce dernier est libéré.

Mise au point pour une position de marche automatique. (Voir Fig. 12.)

(Retirer le capuchon en caoutchouc.)

Dans le cas où la tête de la pointe de lecture s'abaisse en dehors du disque.

—Déplacer dans le sens des aiguilles d'une montre.

Dans le cas où la tête de la pointe de lecture s'abaisse trop loin du sillon enregistré.

—Déplacer dans le sens contraire des aiguilles d'une montre.

Mise au point pour une position de retour automatique (Voir Fig. 12.)

(Retirer le tapis du plateau de lecture.)

Dans le cas où le bras de lecture tend à revenir avant que l'audition ne soit terminée.

—Déplacer dans le sens des aiguilles d'une montre.

Dans le cas où le bras de lecture ne peut revenir en arrière après que le dernier sillon du disque ait été joué.

—Déplacer dans le sens contraire des aiguilles d'une montre.

Réglage de la vitesse (avec la manette de réglage de précision (Voir Fig. 13.)

Les points du stroboscope sont réglés sur le bord du plateau du tourne-disque en fonction de la fréquence de réseau et de la vitesse des disques.

Il faut effectuer le réglage de la vitesse en se référant aux indications des points du stroboscope.

1. Régler la manette sélectrice de vitesse sur la vitesse devant être mise au point.
2. Libérer le clip de retenue du bras et déplacer le bras de lecture vers le disque.
   La lampe-témoin/illuminomètre stroboscopique s'éclairera et le plateau commencera à tourner.
3. Tout en tournant la manette de réglage de précision suffisamment, soit dans le sens "+" soit dans le sens "—", ajuster de façon à ce que les points du stroboscope du plateau paraissent stationnaires.
   Cet état représente la vitesse correcte.

Sens "+"

La vitesse du plateau augmentera. Tourner la manette dans cette direction si les points stroboscopiques semblent "**reculer**", c.-à-d. se déplacer dans le sens inverse des aiguilles d'une montre. Lorsque les points paraissent immobiles, la vitesse du plateau est exacte.

Sens "—"

La vitesse du plateau diminuera. Tourner la manette dans cette direction si les points stroboscopiques semblent "**s'écouler vers l'avant**", c.-à-d. se déplacer dans le sens des aiguilles d'une montre, jusqu'à ce qu'ils paraissent stationnaires.

En outre, le bouton de réglage précis de vitesse peut être utilisé à la fois pour le 33-1/3 et le 45 t/p.m.

La mise au point se fait selon la vitesse choisie (33-1/3 t/p.m. ou 45 t/p.m.).

Nota:

Image des points stroboscopiques.

La lampe-témoin/illuminomètre stroboscopique de cet appareil utilise une alimentation commerciale standard. La fréquence d'une pareille source d'énergie, lorsqu'elle est effectivement mesurée, montre une variation d'àpeu près 0,2%.

Comme une telle variation de la source d'énergie affecte l'illuminomètre stroboscopique, l'image des points stroboscopiques semble varier aussi sur une certaine étendue. Mais l'appareil n'est pas affecté par ces variations de la source d'énergie, étant donné qu'un moteur à courant continu est utilisé.

En d'autres mots, la rotation du plateau restera constante et les légers déplacements dans le mouvement des points ne reflètent simplement qu'une déviation normale dans la fréquence de la source d'énergie.

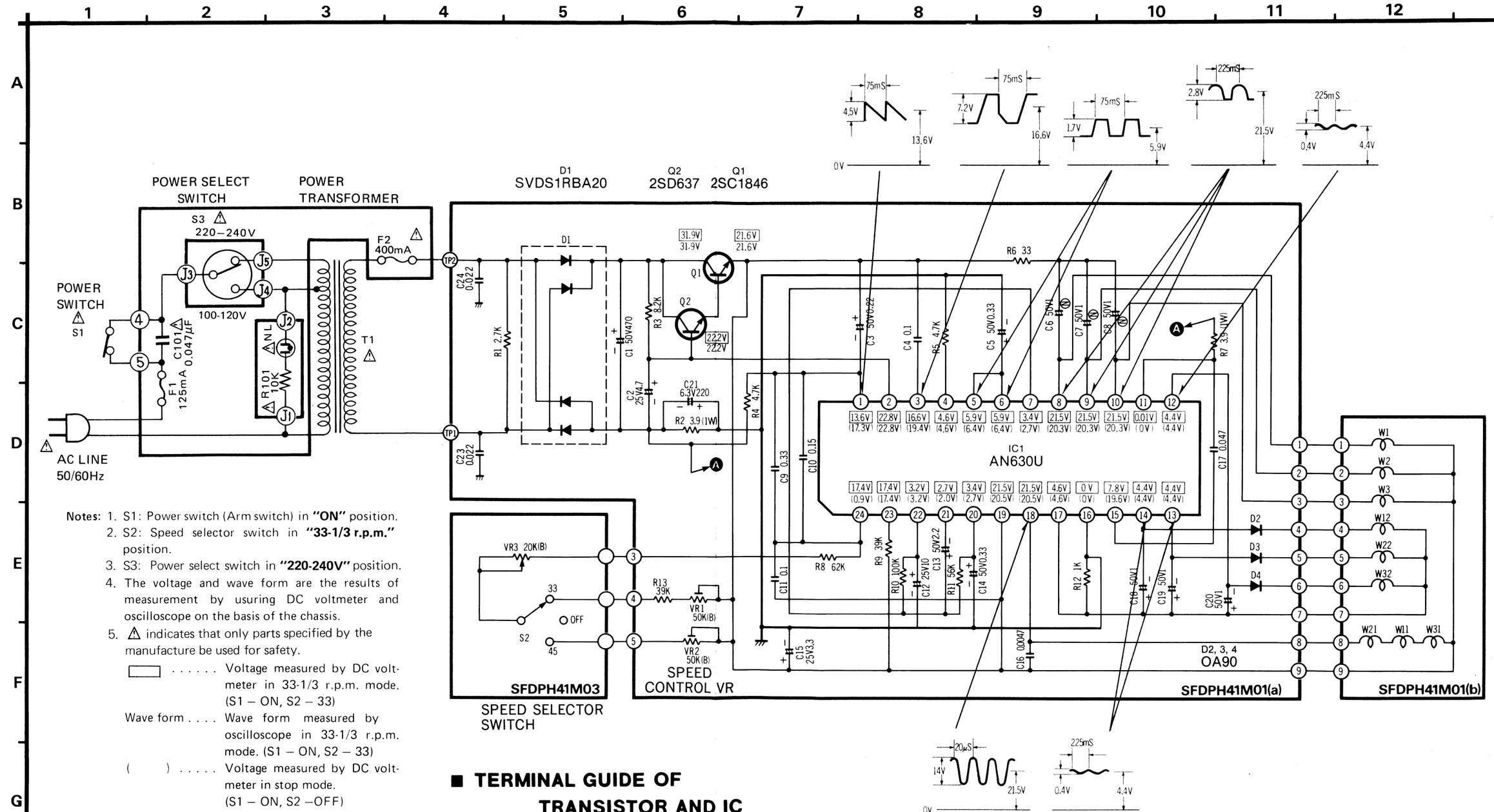
■ REPLACEMENT PARTS LIST (Electric Parts)

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC1		AN630U	Integrated Circuit
TRANSISTORS			
Q1 Q2		2SC1846–R 2SD637	Transistor Transistor
DIODES			
D1 D2, 3, 4	⚠	**SVDS1RBA20Z** **20A90**	Rectifier Diode
TRANSFORMER			
T1	⚠	SLTF5352C	Power Transformer
FUSE			
F1 F2	⚠ ⚠	XBA2C012TRO XBA2C04TRO	125mA, Fuse 400mA, Fuse
SWITCHES			
S1 S2 S3		SFDSAH764039 EVAH28S10AAY SFDSHXW13312	Switch, Power Switch, Speed Selector Switch, Power Selector
VARIABLE RESISTOR			
VR1, 2 VR3		EVLS6AA00B54 EVHX8AF15B24	50kΩ (B), Speed Control (33 r.p.m. & 45 r.p.m.) 20kΩ (B), Pitch Control
NEON LAMP			
NL	⚠	SFDNE2HU	Lamp, Neon
RESISTORS			
R1		**ERD50FJ272**	Carbon, 2.7kΩ, 1/2W, ±5%
R2		**ERX1ANJ3R9**	Metallic, 3.9Ω, 1W, ±5%
R3		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ±5%
R4, 5		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R6		**ERD25FJ330**	Carbon, 33Ω, 1/4W, ±5%
R7		**ERX1ANJ3R9**	Metallic, 3.9Ω, 1W, ±5%
R8		**ERO25CKF6202**	Metal Film, 62kΩ, 1/4W, ±1%
R9		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ±5%
R10		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R11		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ±5%
R12		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R13		**ERO25CKF3902**	Metal Film, 39kΩ, 1/4W, ±1%
R102		**ERX1ANJ103**	Metallic, 10kΩ, 1W, ±5%
CAPACITORS			
C1		**ECEB1HS471**	Electrolytic, 470μF, 50V
C2		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C3		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C4		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C5		**ECEA50ZR33**	Electrolytic, 0.33μF, 50V
C6, 7		**ECEA50N1**	Non-polar Electrolytic, 1μF, 50V
C8		**ECEA50N1**	Non-polar Electrolytic, 1μF, 50V
C9		ECQF2334KZ	Polypropylene, 0.33μF, 200V, ±10%
C10		ECQM1H154KZ	Polyester, 0.15μF, 50V, ±10%
C11		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C12		**ECEA25M10R**	Electrolytic, 10μF, 25V
C13		**ECEA50M2R2R**	Electrolytic, 2.2μF, 50V
C14		**ECEA50MR33R**	Electrolytic, 0.33μF, 50V
C15		**ECEA1VS330**	Electrolytic, 33μF, 25V
C16		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ±10%
C17		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C18, 19		**ECEA50Z1**	Electrolytic, 1μF, 50V
C20		**ECEA50Z1**	Electrolytic, 1μF, 50V
C21		**ECEA1AS221**	Electrolytic, 220μF, 10V
C22, 23		ECKD1H223PF	Ceramic, 0.022μF
C101		ECQE2A103MZ	Polypropylene, 0.01μF, ±20%

Schematic Diagram (This schematic diagram may be modified at any time with the development of new technology.)



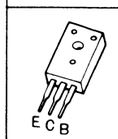
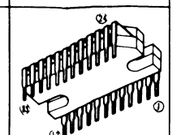
Notes:
1. S1: Power switch (Arm switch) in **"ON"** position.
2. S2: Speed selector switch in **"33-1/3 r.p.m."** position.
3. S3: Power select switch in **"220-240V"** position.
4. The voltage and wave form are the results of measurement by usuring DC voltmeter and oscilloscope on the basis of the chassis.
5. ⚠ indicates that only parts specified by the manufacture be used for safety.

▭ . . . . . Voltage measured by DC voltmeter in 33-1/3 r.p.m. mode. (S1 – ON, S2 – 33)

Wave form . . . . Wave form measured by oscilloscope in 33-1/3 r.p.m. mode. (S1 – ON, S2 – 33)

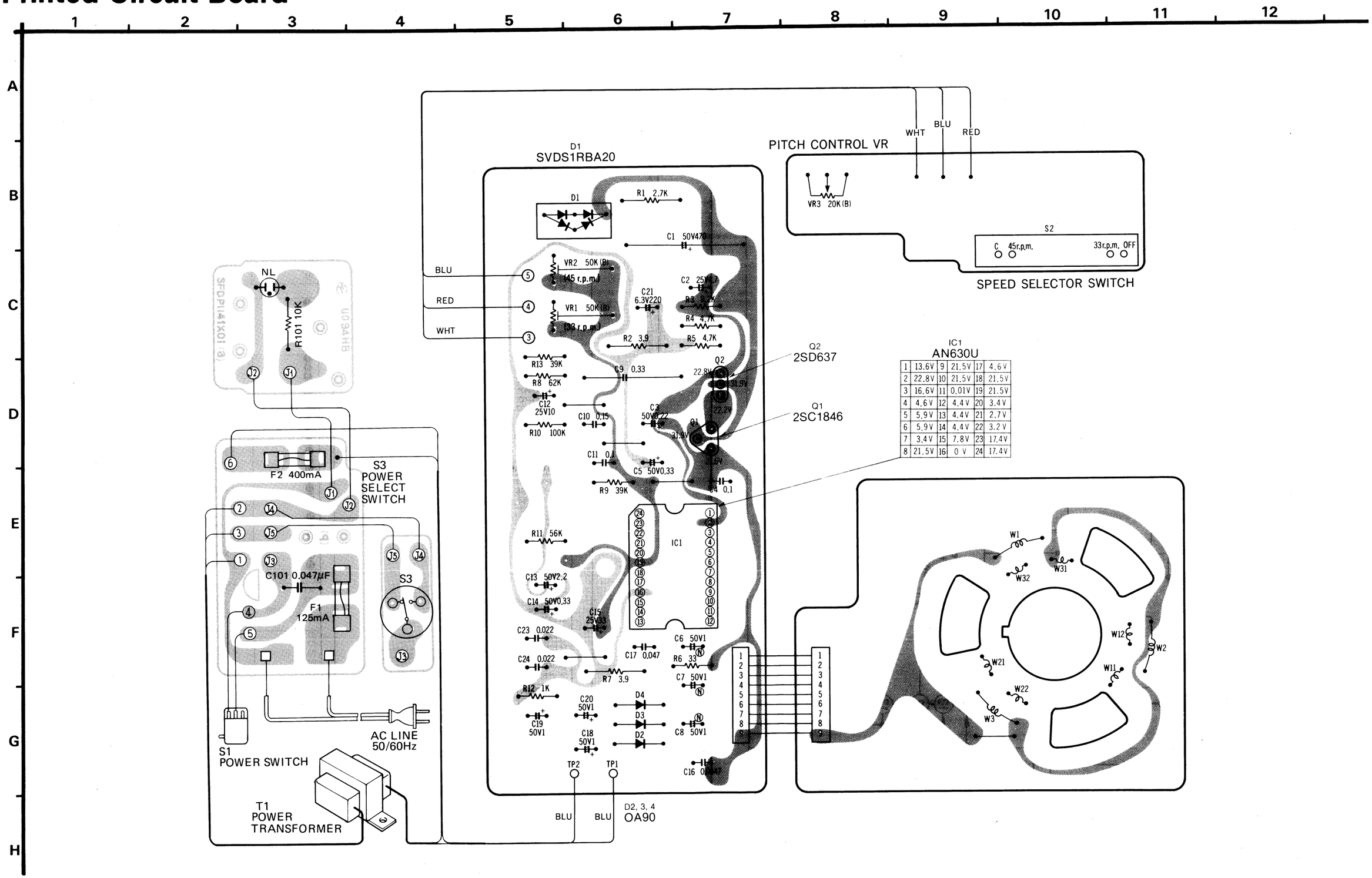
( ) . . . . . Voltage measured by DC voltmeter in stop mode. (S1 – ON, S2 –OFF)

■ TERMINAL GUIDE OF TRANSISTOR AND IC

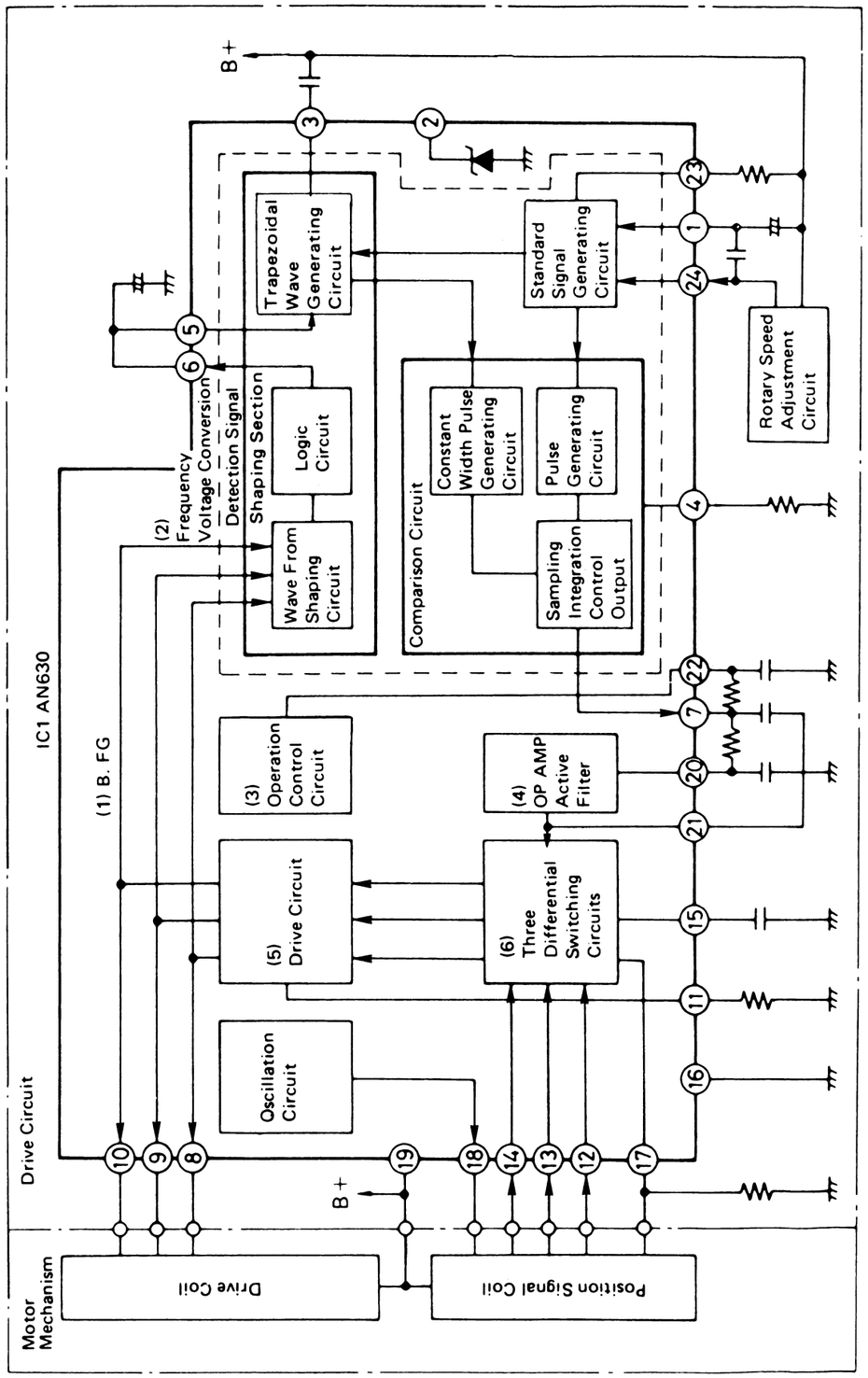
2SC1846	2SD637	AN630U
		

Printed Circuit Board

Earth (Ground) lines
B lines



■ BLOCK DIAGRAM



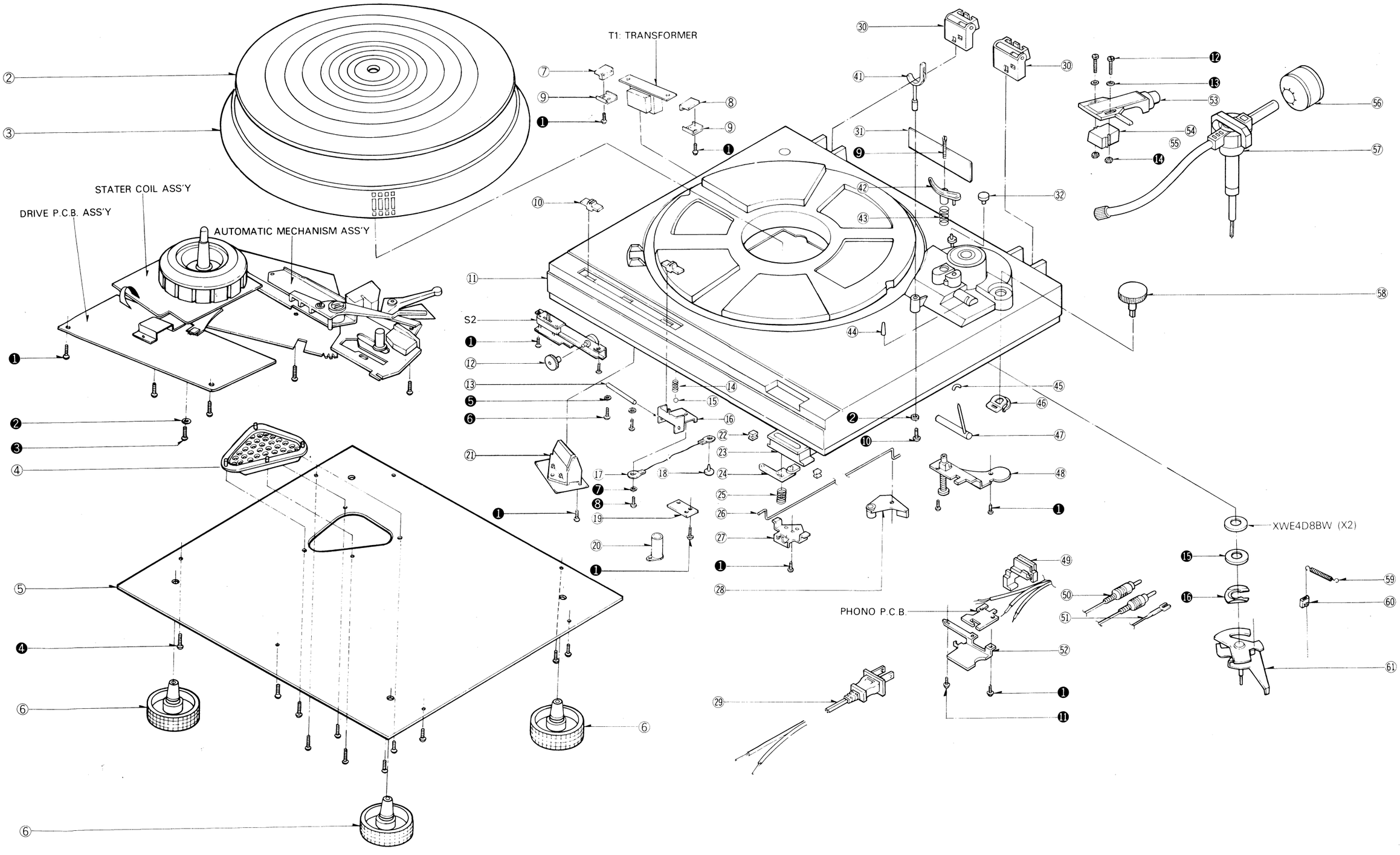
■ REPLACEMENT PARTS LIST (Cabinet and Chassis Parts)

Notes: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacture be used safety.
3. SL-H401 (XA) → [XA]

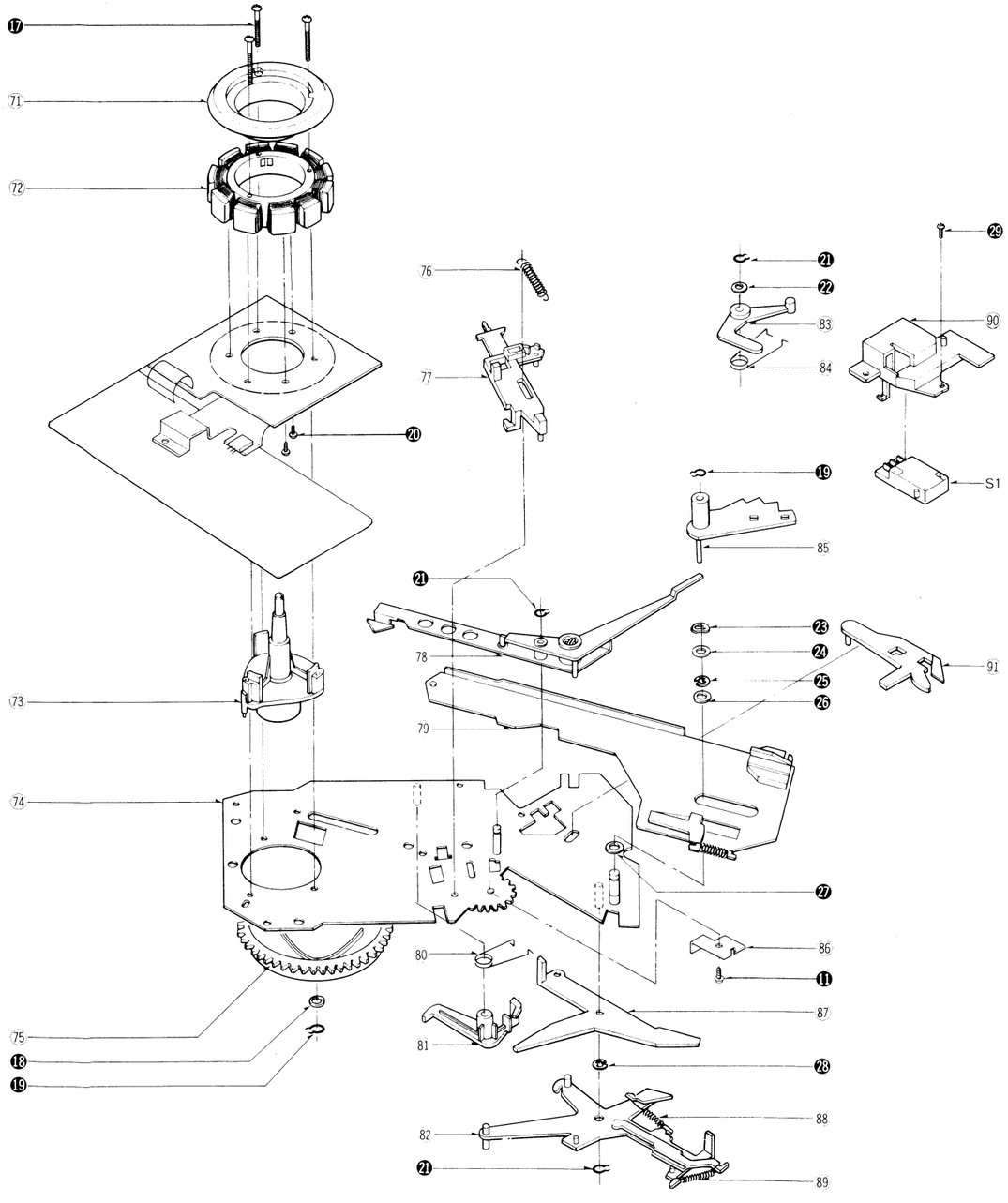
Ref. No.		Part No.	Part Name & Description
		CABINET and CHASSIS PARTS	
1		SFADH31X01E	Dust Cover
2		SFTG140–01	Turntable Mat
3		SFTE290M01A	Turntable
4		SFUM222–20	Cover, Gear
5		SFAUH41M01	Bottom Board
6		SFGA202X01	Audio Insulator
7		SFGCD20X02	Cushion, Power Transformer
8		SFGCD20X01	Cushion, Power Transformer
9		SFUPD20–02	Supporter, Power Transformer
10		SFKTH41M01	Knob, Speed Select & Record Size
11		SFACH41M01	Cabinet
12		SFKT212–02	Knob, Pitch Control
13		SFXJH41M01	Rod, Bracket
14		SFQA130–11	Spring, Supporter
15		SFYB5–32	Ball, Supporter
16		SFUPH41M01	Supporter, Record Size Knob
17		SFUZH41M02E	Cord, Record Size
18		SFUZQ30–04	Spacer, Size Cord
19		SFUPD30–03	Supporter, Size Cord
20		SFUMH41M01	Spacer, Size Cord
21		SFUM212–07	Cover, Neon Lamp
22		SFGZH31–01	Cushion, Start/Stop Knob
23		SFKTH31–01	Knob, Start/Stop
24		SFUMD20–01	Lever, Operation
25		SFQAD20–01	Spring, Start/Stop Knob
26		SFUZH41M01	Rod, Start/Stop
27		SFUPD20–03	Supporter, Start/Stop
28		SFUMD30–02	Supporter, Operating
29	⚠	RJA23ZC	AC Cord
30		SFAT301–01A	Hinge Ass'y
31		SFNNH41X01	Name Plate
32		SFGK170–01	Cap, Rubber
		TONE ARM and ARM BASE	
41		SFKU212–01E	Arm Rest
42		SFPRT13004K	Lift Ass'y
43		SFQA829–03	Spring, Lift Ass'y
44		SFPAB12002	Knob, Cueing Lever
45		SFPGM13204	Supporter, Cueing
46		SFUP301–04	Supporter, Anti-Skate Force Control
47		SFPJL00101K	Lever, Cueing
48		SFUPH31–01A	Bracket, Lift Ass'y
49		SFUM212–08	Clamper, Cord
50		SFDH212–01	Phono Cord
51		SFEL028–01E	Ground Wire
52		SFUP683R04	Plate, Shield
53		SFPCC40101A	Headshell
54		EPC270CK	Cartridge
55		EPS270ED	Stylus
56		SFPWG68302K	Balance Weight
57		SFPAM40101A	Tone Arm
58		SFPJK68302	Knob, Anti-Skate Force Control
59		SFQH301–01	Spring, Anti-Skate Force Control
60		SFUM301–04	Supporter, Anti-Skate Force Control Spring
61		SFUPB30–01A	Tone Arm Fixing Plate Ass'y
		AUTOMATIC MECHANISM ASS'Y	
71		SFMGQ20–01	Cover, Stater Frame Ass'y
72		SFMG170–01A	Stater Frame
73		SFMZQ20–01A	Shaft, Stater Frame Ass'y
74		SFUKD20–11E	Plate, Automatic Mechanism

Ref. No.		Part No.	Part Name & Description
75		SFUG190–22E	Main Gear Ass'y
76		SFQAD30–01	Spring, Stop SW Plate
77		SFUMQ30–14E	Plate, Stop SW
78		SFUCQ20–11E	Actuating Plate Ass'y
79		SFUBQ30–11A	Operating Plate Ass'y
80		SFQS222–11	Spring, Gear Setting
81		SFUM222–11	Plate, Gear Setting
82		SFUMQ30–11E	Plate, Detector Ass'y
83		SFUMQ20–19	Plate, Brake
84		SFQSQ20–13	Spring, Brake Plate
85		SFUMQ30–12	Index, Plate
86		SFUPH41M04	Supporter, Detector Plate
87		SFUMQ20–17	Lever, Stop Switch
88		SFQHQ30–14	Spring, Detector Plate
89		SFQHQ30–13	Spring, Detector Plate
90		SFUMQ30–18	Cover, Stop Switch
91		SFUMQ20–16	Supporter, Stop Switch
		SCREWS, WASHERS and CIRCLIPS	
❶		**XTV3+10BFZ**	Screw
❷		**XWG3**	Washer
❸		**XTN3+16B**	Screw
❹		**XTS3+10BFZ**	Screw
❺		**XWG3FZ**	Washer
❻		**XTB3+10BFZ**	Screw
❼		**XWA3B**	Washer
❽		**XSN3+8S**	Screw
❾		SFXG829–1	Screw
❿		**XSN3+14S**	Screw
⓫		**XTN3+8B**	Screw
⓬		SFPEV9802	Screw
⓭		SFPEW9601	Washer
⓮		SFPEN3302	Nut
⓯		SFXWH31–01	Washer
⓰		SFXW301–02	Washer
⓱		SFXGQ20–02	Screw
⓲		SFXW890B01	Washer
⓳		**XUB6FT**	Circlip
⓴		**XTN26+6B**	Screw
㉑		**XUB4FT**	Circlip
㉒		SFXW910–13	Washer
㉓		SFXW831–5	Washer
㉔		SFXW230–11	Washer
㉕		**XUC5FT**	Circlip
㉖		SFXW623–2	Washer
㉗		SFXW130–13	Washer
㉘		**XUC3FT**	Circlip
㉙		**XTV3+6B**	Screw
		ACCESSORIES	
A1		SFNUH41X01	Instruction Book
A2		SFWE154A1	Adaptor, 45 r.p.m.
A3 [XA] only		SFDKI19118	2P-Plug
		PACKING PARTS	
P1		SFHPH41X01	Carton
P2		SFHHH41M01	Pad, Front
P3		SFHHH41M02	Pad, Rear
P4		SFHDH41M01	Pad, Top
P5		SFHDH41M02	Pad, Turntable
P6		SFYH60X60	Polyethylene Cover, Player Unit
P7		SFYH60X60	Polyethylene Cover, Dust Cover
P8		SFYH40X45	Polyethylene Cover, Turntable
P9		SPB1083	Polyethylene Cover, Balance Weight
P10		SPB1083	Polyethylene Cover, Headshell
P11		SFYF05A06	Polyethylene Cover, 45 r.p.m. Adaptor

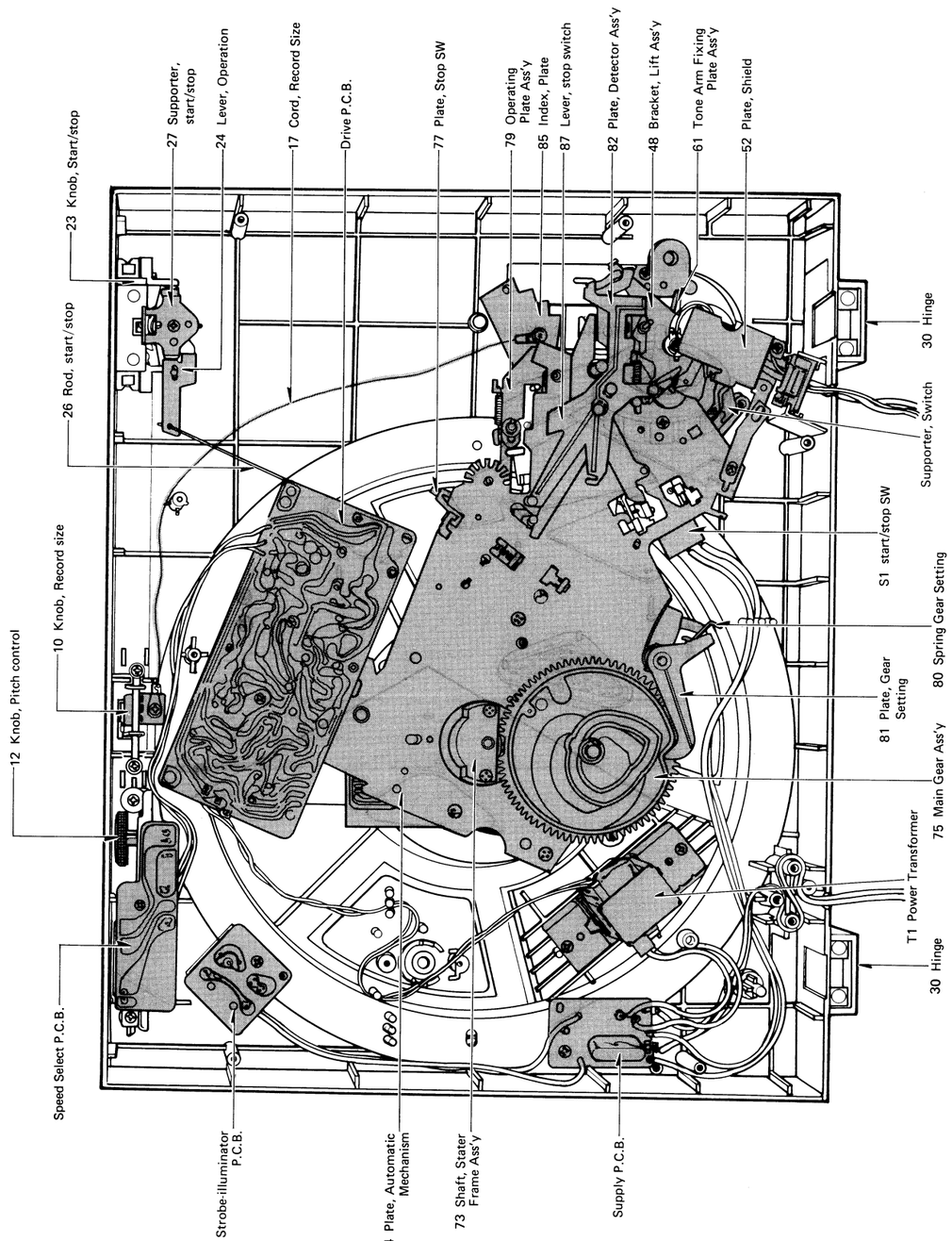
■ EXPLODED VIEWS (CABINET and CHASSIS)



■ EXPLODED VIEWS (AUTOMATIC MECHANISM ASS'Y)



■ PARTS ARRANGEMENT DIAGRAM



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